# MVX Matrix Switchers • Setup Guide

The MVX VGA matrix switchers distribute high resolution video and stereo audio input signals to any combination of outputs. The matrix switcher can route multiple input/output configurations simultaneously. The switchers are available in four matrix sizes:

- 4 inputs by 4 outputs
- 4 inputs by 8 outputs
- 8 inputs by 4 outputs
- 8 inputs by 8 outputs

Connections
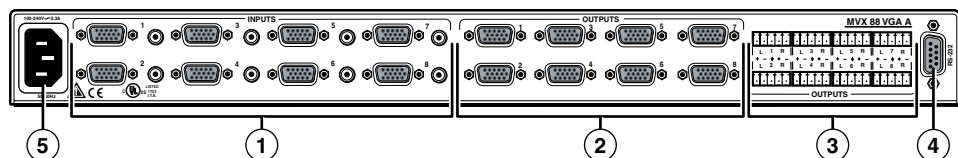
> **NOTE:** Smaller matrix sizes have fewer input connectors, output connectors, or both.

① **Video and audio inputs** —

**Video inputs** — Connect up to four or eight analog computer-video sources to these 15-pin HD female connectors.

Audio inputs — Connect up to four or eight unbalanced stereo audio sources to these 3.5 mm mini stereo jacks for unbalanced audio input.

② **RGB video output connectors** — Connect up to four or eight RGBHV high resolution video displays to these 15-pin HD female connectors.

> **NOTE:** The MVX switchers can also switch RGBS, RGsB, RsGsBs, component/HDTV video, S-video, and composite video. Some video sources may require adapters.

③ **Balanced or unbalanced audio output connectors** — Connect up to four or eight balanced or unbalanced stereo audio devices, such as an audio amplifier or powered speakers, to these 3.5 mm, 5-pole captive screw connectors.

$\frac{3}{16}$" MAX. (5 mm)
Do not tin the wires!

Unbalanced Stereo Output   **Balanced Stereo Output**
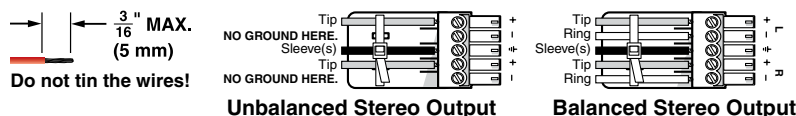
> **CAUTION:** For unbalanced audio, connect the sleeves to the ground contact. **DO NOT** connect the sleeves to the negative (-) contacts.

④ **RS-232 connector** — Connect a host device, such as a computer or control system, to the switcher via this 9-pin D connector for remote control of the switcher. See the pinout drawing at right.

Pin	RS-232	Function
1	—	Not used
2	Tx	Transmit data
3	Rx	Receive data
4	—	Not used
5	Gnd	Signal ground
6 - 8	—	Not used
9	—	Hardwired IR

> **NOTES:** • The cable used to connect the RS-232 port to a computer or control system may need to be modified by removing pins or cutting wires. If you encounter problems while operating under RS-232 control (the switcher may hang up), pins 1, 4, 6, 7, and 8 may need to be disconnected. Either cut the wire to pins 1, 4, and 6 through 8 in a hard-shelled connector or remove pins 1, 4, and 6 through 8 from a molded plug.
>
> • See *MVX Matrix Switchers User Guide* for definitions of the SIS commands and details on how to install and use the control software.
>
> • Using the hardwired IR input on pin 9, you can use a control system with IR-learning capabilities to operate the switcher just as if you were using an IR 501 remote control. The control system must first "learn" the IR command from an IR 501, after which it sends the same commands to the MVX via pin 9.

⑤ **AC power connector** — Plug a standard IEC power cord into this connector to connect the switcher to a 100 VAC to 240 VAC, 50-60 Hz power source.

MVX Matrix Switchers • Setup Guide (Continued)

Controls and Indicators
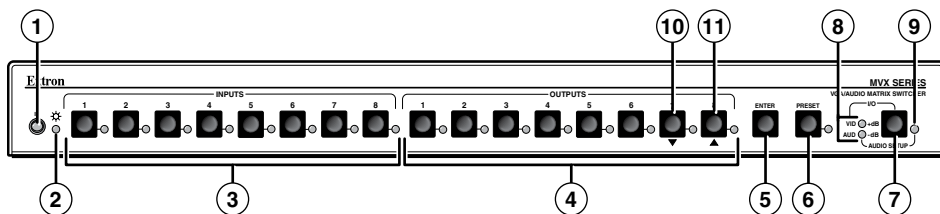
> **NOTE:** Smaller matrix sizes have fewer input buttons, output buttons, or both.

① **Infrared remote sensor** — This sensor receives infrared (IR) signals from the optional IR 501 small matrix universal remote control. Point the IR remote control within 30 degrees of this sensor for best results. Operation of the switcher using the IR 501 remote control is described in the *IR 501 Small Matrix IR Remote Control User Guide*.

② **Power/data/audio LED** —

When lit, indicates that power is applied to the matrix switcher.

When blinking off and on, indicates that an IR signal has been received.

In Audio Setup mode, serves as an audio meter that is tied to output 1 (see "**Viewing and Adjusting the Audio Input Gain**" on page 4).

③ **Input buttons and LEDs** — The input buttons and LEDs select and identify inputs.

④ **Output buttons and LEDs** — The output buttons and LEDs select and identify outputs.

> **NOTES:** • The input and output buttons and LEDs also serve as preset selection buttons and indicators, allowing you to select presets to either save or recall (see "**Saving or Recalling a Preset**" on the next page).
>
> • The Output 1 through Output 3 LEDs also serve as input audio level indicators, each indicating a range of 6 dB when lit.
>
> • On 8-output switchers, the Output 7 and Output 8 buttons and LEDs also serve as the Down (▼) and Up (▲) controls and indicators. See ⑩ and ⑪.

⑤ **Enter button** — The Enter button saves changes when you set up a new configuration (see "**Creating a Tie**" on the next page).

⑥ **Preset button and LED** — The Preset button activates either Save Preset mode or Recall Preset mode. Save Preset mode saves a configuration as a preset. Recall Preset mode recalls and activates a previously-defined preset. The Preset button indicates Save Preset mode when it is blinking and Recall Preset mode when it lights steadily.

⑦ **I/O and Audio Setup button** —

Press and release — Cycles through video and audio, video only, or audio only for input and output selection. See the Video and Audio LEDs (⑧) for the sequence.

Press and hold — The I/O button also serves as the Audio Setup mode selection button. To enable the Audio Setup mode, press and **hold** the Audio Setup button for about 2 seconds until the Audio Setup LED (⑨) lights. In Audio Setup mode, you can view and change the current audio level setting for each input (see "**Viewing and Adjusting the Audio Input Gain**" on page 4).

Audio Setup mode times out after approximately 30 seconds of inactivity.

⑧ **Video/+dB LED and Audio/–dB LED** —

I/O selection — The Video and Audio LEDs indicate whether video and audio, video only, or audio only are selected using the input buttons (③) and output buttons (④). Pressing the I/O button advances through a cycle of video and/or audio selection.

Audio Setup mode — The –dB and +dB LEDs indicate the polarity of the audio level setting (see "**Viewing and Adjusting the Audio Input Gain**" on page 4). Both LEDs light to indicate unity gain (0 dB).
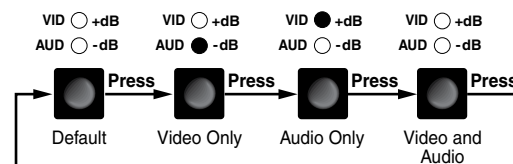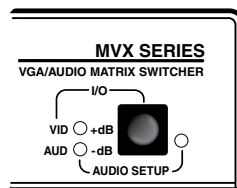
⑨ **Audio Setup LED** — The Audio Setup LED lights red to indicate that the switcher is in Audio Setup mode (see "**Viewing and Adjusting the Audio Input Gain**" on page 4).

> **NOTE:** The Audio Setup LED also indicates errors when you use an IR 501 small matrix remote control. The LED lights for approximately 1 second when the switcher receives an unexpected or out-of-sequence IR command from the remote control. The switcher otherwise ignores the command.

⑩ **Down (▼) button and LED** — The ▼ button decreases the audio gain for a selected input. Press and release the button to decrease the gain by 1 dB or press and hold the button to decrease the gain by 3 dB per second until the button is released or the lower limit is reached.

> **NOTES:** • On 8-output switchers, this button and LED are secondary functions of the Output 7 button and LED.
>
> • The ▼ LED flashes once in Audio Setup mode to indicate each 1 dB decrease in the input audio gain (see "**Viewing and Adjusting the Audio Input Gain**" on page 4. The ▼ LED lights steadily in Audio Setup mode to indicate that the adjustment has reached the maximum attenuation (-18 dB).

⑪ **Up (▲) button and LED** — The ▲ button increases the gain for a selected input. Press and release the button to increase the audio level by 1 dB or press and hold the button to increase the audio level by 3 dB per second until the button is released or the upper limit is reached.

> **NOTES:** • On 8-output switchers, this button and LED are secondary functions of the Output 8 button and LED.
>
> • The ▲ LED flashes once in Audio Setup mode to indicate each 1 dB increase in the input audio gain (see "**Viewing and Adjusting the Audio Input Gain**" on page 4). The ▲ LED lights steadily in Audio Setup mode to indicate that the adjustment has reached the maximum gain (+10 dB).

Operation

Powering Up

Plug in the switcher to apply power. The switcher performs a self-test that sequences the front panel LEDs. After the self-test, video and audio are selected and the configuration and audio settings are the same as they were when power was removed.
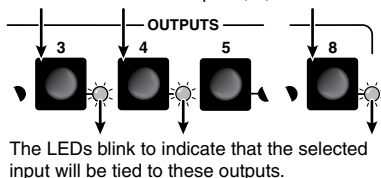
Creating a Tie

1. Press and release the I/O button to select (lit) or deselect (unlit) the Video LED, audio LED, or both as desired.
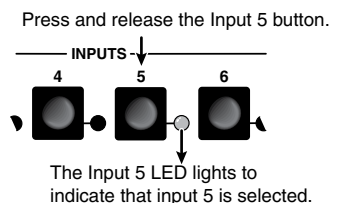
2. Press and release the desired input button.

> **NOTE:** If you wait for the 5-second input/output button timeout to occur after either step **2** or step **3**, the entire set of ties is cancelled.

Press and release the Input 5 button.
— INPUTS —
4   5   6
The Input 5 LED lights to indicate that input 5 is selected.

3. Press and release one or more desired output buttons.

Press and release the Output 3, 4, and 8 buttons.
— OUTPUTS —
3   4   5   8
The LEDs blink to indicate that the selected input will be tied to these outputs.
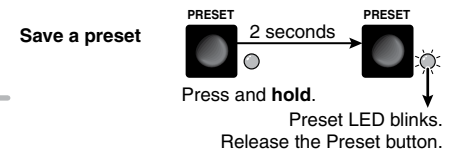
4. Press and release the Enter button. The LEDs for the selected input and the selected outputs light steadily for approximately 1 second to indicate the tie and then turn off.
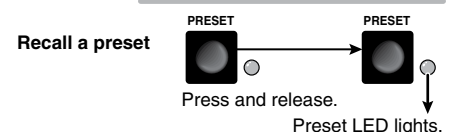
Saving or Recalling a Preset

1. **To save a preset**: Press and hold the Preset button until the Preset LED starts blinking.

Save a preset
PRESET   2 seconds   PRESET
Press and **hold**.
Preset LED blinks.
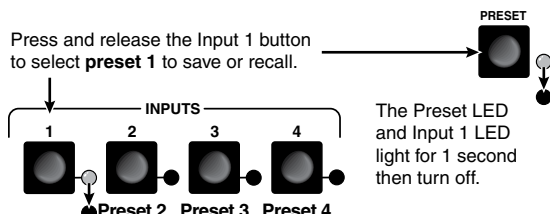Release the Preset button.

To recall a preset: Press and release the Preset button.

2. Press the desired input or output button. The LEDs for the selected input button and Preset button remain lit for 1 second to indicate the preset and then turn off.

Recall a preset
PRESET   PRESET
Press and release.
Preset LED lights.

Press and release the Input 1 button to select **preset 1** to save or recall.

PRESET

— INPUTS —
1   2   3   4
Preset 2   Preset 3   Preset 4

The Preset LED and Input 1 LED light for 1 second then turn off.

Viewing and Adjusting the Audio Input Gain

1. Apply audio signals to all inputs to be adjusted.

2. Press and hold the Audio Setup (I/O) button for 2 seconds until the Audio LED lights.

3. Press an input button (see the *MVX Matrix Switchers User Guide* to read the displayed value).

Press and release an input button.

OUTPUTS
1   2   3

○ +dB +/–dB LEDs
● -dB show polarity.

The input LED lights.

The Output 1 through 3 LEDs display the audio level range of the input.

☼ Power blinks to show the signal level.

Press and **hold** the button.

2 seconds

AUDIO SETUP   AUDIO SETUP

The LED lights. Release the button.
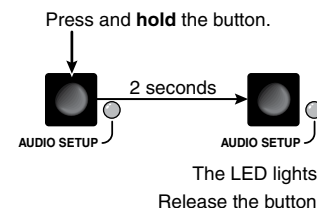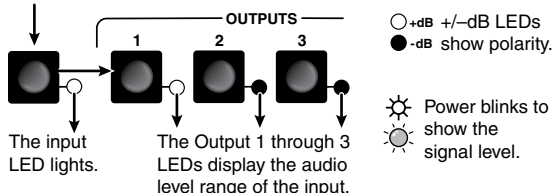
4. Increase and decrease the audio input gain by pressing the ▲ and ▼ buttons until the audio indicator (Power LED) blinks frequently. (The Power LED blinks frequently when the audio level of the selected input has been adjusted to the –10 dBV internal reference level.)

5. For other inputs, repeat steps **3** and **4**.

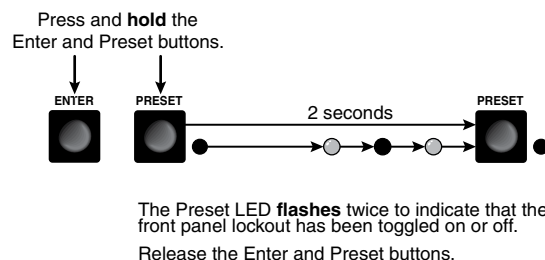▼ button decreases the audio level.   ▲ button increases the audio level.
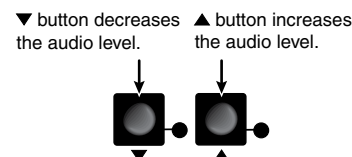
Front Panel Security Lockout (Executive Mode)

The front panel security lockout limits the operation of the switcher from the front panel and optional IR remote control. When the switcher is locked, the Enter button, I/O button (video, audio, or video and audio selection), and all of the front panel audio gain and attenuation functions are disabled. The front panel input and output buttons continue to allow ties to be viewed, but ties cannot be created.

The front panel security lockout also disables the IR remote sensor to lock out remote control functions.

Press and **hold** the Enter button and the Preset button simultaneously for approximately 2 seconds to toggle the lock on and off.

Press and **hold** the Enter and Preset buttons.

ENTER   PRESET   2 seconds   PRESET

The Preset LED **flashes** twice to indicate that the front panel lockout has been toggled on or off.

Release the Enter and Preset buttons.

Selected SIS Commands

The table below shows a partial list of SIS commands the you can use for operation and configuration of the switcher. For a complete listing, see the *MVX Matrix Switchers User Guide*. Run the following commands from a PC connected to the RS-232 port (**item** ④ on page 1). Set gain (G) and set attenuation (g) are the only case sensitive commands

Command	ASCII Command (Host to Unit)	Response (Unit to Host)	Additional Information
Tie input X1 video and audio to output X2	X1*X2!	OutX2•InX1•All↵	
Tie input X1 video to output X2	X1*X2&	OutX2•InX1•RGB↵	Video is broken away.
Tie input X1 audio to output X2	X1*X2$	OutX2•InX1•Aud↵	Audio is broken away.
Quick, simultaneous, multiple tie	Esc+QX1*X2!…X1*X2$←	Qik↵	! (video and audio), & (video), and $ (audio) are all valid.
Tie input to all outputs	X1*!	InX1•All (or RGB or Aud)↵	& (video) and $ (audio) are also valid.
Video mute and unmute	X2*X3B	VmtX2*X3↵	X2 = output, X3 = 0 (mute off) or 1 (mute on).
Audio mute and unmute	X2*X3Z	AmtX2*X3↵	X2 = output, X3 = 0 (mute off) or 1 (mute on).
Set audio input level to +dB value	X1*X4G	InX1•AudX5↵	X1 = input, X4 = 00 to 10, X5 = -18 to +10 dB.
Set audio input level to -dB value	X1*X6g	InX1•AudX5↵	X1 = input, X6 = 00 to 18, X5 = -18 to +10 dB.
Set audio output level	X2*Ø*4Ø#	OutX2•LvX7↵	X2 = output, X7 = 0 (consumer, -10 dBV) or 1 (pro, +4 dBu).
Save a global preset	X8,	SprX8↵	Save the current configuration. X8 = 01 through 16.
Recall a global preset	X8.	RprX8↵	X8 = 01 through 16.
Set RGB delay	EscX2*X9D←	OutX2•DlyX9↵	X2 = output, X9 = RGB delay in ½ second increments (5 sec. max.).
Lock and unlock front panel	X10X	ExeX10↵	X10 = 0 (unlocked) or 1 (locked).

↵ = Carriage return/line feed   ← = Carriage return (no line feed)   • = space   Esc = Escape key